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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/720,009	11/21/2003	Ole Kirkeby	915-005.080	2779

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EXAMINER

PAUL, DISLER

ART UNIT	PAPER NUMBER
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2635

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/21/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/720,009

Applicant(s)

KIRKEBY, OLE

Examiner

Disler Paul

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 3/17/04, 1/16/04 and 11/21/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See *Lowry*, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

Claim(s) 19-20 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 19-20 defines a computer program embodying functional descriptive material. However, the claim does not define a computer-readable medium or memory and is thus non-statutory for that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized" – Guidelines Annex

IV). That is, the scope of the presently claimed a computer program can range from paper on which the program is written, to a program simply contemplated and memorized by a person.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kirkeby ("US 2002/0097880A1" and Fincham ("US 2002/0154783 A1") and Baumgarte et al. ("US 2003/0219130 A1").

Re claim 1, Kirkeby discloses a method in stereo widening or corresponding spatial signal processing of stereo format signals to become suitable for headphone listening ("Kirkeby, page 1 [0008] line 3-8; page 1 [0009] line 19-22-stereo widening may be suitable for head listening"): the method comprises at least the steps of forming left and right channel signal paths in order to process left and right channel input signals into left and right channel output signals ("fig.1/ input channel(L,R) to be output (60,90)"), and forming at

least one delay introducing a cross-talk signal path between the left and right channel signal paths ("fig.1/delay cross-talk(80,50); page 2[0014] line 27-33"), However, Kirkeby fail to disclose the step of forming a separate monophonic signal path in order to equalize a frequency spectrum of a monophonic component of the left and right channel output signals by at least extracting from the left and right channel input signals.

Fincham discloses a sound reproduction of left and right speakers in which there is a formation of separate signal path in order to equalize a frequency spectrum of a component of the left and right channel output signals by at least extracting from the left and right channel input signals ("fig.9-1/extract inputs(940) to be equalized (945) to be output at (947); page 5[0048] line 19-21") for the purpose of achieving optimal sound quality. Therefore, taking the combine teaching of Kirkeby and Fincham as a whole, one skill in the art would have found it obvious to modify Kirkeby to incorporate the forming a separate signal path in order to equalize a frequency spectrum of a component of the left and right channel output signals by at least extracting from the left and right channel input signals for the purpose of achieving optimal sound quality.

The combined teaching of Kirkeby and Fincham as a whole, further disclose an at least substantially signal component contained in said signals ("Fincham, fig.9-1/940"), processing the signal component to

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obtain a processed signal component ("Fincham, fig. 9-1/(940) served as the processor"), and combining said processed signal component with at least one of the left and the right channel output signals ("Fincham, fig. 9-1/947, page 5[0051] line 1-6").

The combined teaching of Kirkeby and Fincham as a whole, teach the above. However, they fail to teach the limitation of the signals as being specifically monophonic. However, Baumgarte et al. disclose an auditory scene in which monophonic signals are generated ("page 3 [0032] line 1-4, fig. 3/306") for the purpose of producing auditory scene having objects widths more accurately match the widths of original input auditory scenes.

Therefore, taking the combine teaching of Kirkeby and Fincham and Baumgarte et al. as a whole, one skill in the art would have found it obvious to modify Kirkeby and Fincham to incorporate the generating of monophonic signal for the purpose of producing auditory scene having objects widths more accurately match the widths of original input auditory scenes.

Re claim 2, the method according to claim 1, wherein the at least substantially monophonic signal component is extracted from the left and right input signals based on a momentary average value $(L+R)/2$ of said signals ("Baumgaret, fig. 3/306; page 3[0032]")

Re claim 3, the method according to claim 1, wherein the at least substantially monophonic signal component is extracted from the left and right channel input signals ("Baumgaret, fig.3/306; page 3[0032]") based on similarity between said signals ("Baumgaret, page 4[0047] line 1-6").

Re claim 4, the method according to claim 1, wherein the processing of the monophonic signal component includes processing of a frequency spectrum of said monophonic signal component ("Fincham, fig.9-2/942").

Re claim 5, the method according to claim 4, wherein the processing of the frequency spectrum of said monophonic signal component is performed substantially within a frequency range ranging from 500 Hz to 2 kHz ("Fincham, page 7 [0060] line 9-11; page 8[0069] line 1-5").

Re claim, 6, The method according to claim 1, wherein the processing of the monophonic signal component includes adjustment of the gain of said monophonic signal component ("Fincham, page 50049] line 20-23, fig.9-1/(942); fig.9-2/(942)-adjustable gain")

Re claim 7, the method according to claim 6, wherein the adjustment of the gain is performed in a time varying manner ("Fincham, fig.9-2/(942'); page 5[0050] line 23-26").

Re claim 8, The method according to claim 1, wherein the processing of the monophonic signal component includes adding a delay

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to said monophonic signal component ("Kirkeby, page 2 line 27-33; fig. 1/(50, 80)").

Re claim 13, the device according to claim 12,1 wherein the means for processing the frequency spectrum of said signal component comprise a filter structure ("Finchman, fig. 9-1/(942)"); the filter being digital Infinite Impulse Response (IIR) or a Finite Impulse Response (FIR) filter ("kirkeby, fig. 5; page 1[0004] line 11-16-MPEG audio digitally encoded"),

Re claim 9-12, in regard to a signal processing device, have been analyzed and rejected with respect to claim 1-4 respectively.

Re claim 14-17, have been analyzed and rejected with respect to claim 5-8 respectively.

Re claim 18, the device according to claim 9, wherein the device is a digital signal processing device ("Kirkeby, fig. 1, page 3[0025]"),

Re claim 19, A computer program in stereo widening or corresponding spatial signal processing of stereo format signals to process said signals to become suitable for headphone listening, has been analyzed and rejected with respect to claim 1.

Re claim 20, has been analyzed and rejected with respect to claim 18.

Re claim 21, in regard to a mobile appliance with audio capabilities, has been analyzed and rejected with respect to claim 1.

Re claim 22, A mobile appliance according to claim 21, wherein it is a portable digital player or a digital mobile telecommunication device ("Fincham, page 8 [0071] line 5-9); page 7 [0066] line 1-10").


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Disler Paul whose telephone number is 571-272-2222. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vu Le can be reached on 571-272-2000. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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LIN YE
PRIMARY EXAMINER

